May 12, 2000
Ref. No.: EOS/ETS-051200-C09

National Aeronautics and
Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Attention: Mr. Willie Fuller
               Code 581
               Building 32, Room N212D

Subject: Contract No.: NAS9-98100
               CSOC SODA Task Order Number GM36
               EOSDIS Test System (ETS) Multimode Portable Simulator for PM-1
               (MPS/PM-1) Delivery of the Release 5.0 Software

Dear Mr. Fuller:

We are pleased to deliver Release 5.0 of the ETS Multimode Portable Simulator for the PM-1 spacecraft (MPS/PM-1). This is the fifth major delivery using our Scalable, Integrated Multimission Simulation Suite (SIMSS) infrastructure and architecture with EOS PM-1 (Aqua) extensions.

The major capabilities added in this release include setting of initial data values into telemetry points and APIDs, providing a spacecraft memory dump facility, and populating data values in APID 1000 in response to a Change Request. Attachment B to this letter provides a complete list of the simulator's capabilities. The new capabilities are highlighted. In addition, 10 Discrepancy Reports and Change Requests were resolved with Release 5.0.

A draft hard copy of the SIMSS/PM-1 User's Guide for Release 5 is being made available to the users with this delivery. In addition, a soft copy of the User's Guide has been placed on the ETS Documentation web site at URL http://esdis-it.gsfc.nasa.gov/ETS/etsdoc.html.

This delivery package contains 12 attachments as listed below. A completed Mission Systems Configuration Management (MSCM) form is included in Attachment L. If you have any questions concerning this delivery, please call me at 301-805-3653.

                         Sincerely yours,

                         Estelle S. Noone
                         CSOC ETS Task Leader

EOSDIS Test System (ETS) Multimode Portable Simulator for PM-1 (MPS/PM-1)
Delivery of the Release 5.0 Software
May 12, 2000, Ref. No.: EOS/ETS-051200-C09

Delivery Package Reviewed and Approved by:

 Janice Swope
 CSOC ETS Customer Service Representative

The following attachments contain the details of the MPS software delivery.

Attachment A - describes the delivery contents for this release
Attachment B - describes the operational changes
Attachment C - contains the instructions to build and install the software
Attachment D - contains any special operating instructions
Attachment E - contains a list of the resolved DRs
Attachment F - contains a list of the unresolved DRs
Attachment G - contains the matrix of requirements addressed by this release
Attachment H - contains the known system limitations
Attachment I   - contains the release history summary matrix
Attachment J   - contains a listing of the delivery media contents
Attachment K - contains documentation references
Attachment L - contains the Mission Systems Configuration Management (MSCM) form

Distribution: (* - Letter Only)

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Ondrus, P. *			Messerly, R.	Noone, E.
Perkins, D. *	Unisys		Shein, H.	Quintin, E.
ESDIS Library	Thompson, S.			Swope, J. *
				Task File

<u>Attachment A – Description of Delivery Contents</u>

The MPS/PM1 Release 5.0 consists of custom software executables that are being delivered on one CD-ROM.   Two copies are being provided.

Enterprise Oracle and Oracle Programmer for Windows NT are necessary for operation of this release. These products were provided with a previous release. The license to use Oracle belongs to the CSOC contract. Therefore, Oracle and Oracle Programmer may be installed only on CSOC computers.

A soft copy of this MPS/PM1 Release 5.0 delivery letter and set of attachments is also being delivered. The attachments have been formatted on a 3.5" IBM PC diskette utilizing the MS WORD word processing tool.

<u>**Attachment B – Summary of Operational Changes**</u>

Operational Capabilities of MPS/PM-1 Release 5.0

(New or modified capabilities with this release are noted in *Italics*.)

Telemetry:

- Transmit telemetry in IP or Serial (clock/data) mode
- Pack telemetry packets and CLCWs into CADUs when in Serial mode
- Generate two streams of CADUs (I & Q) when in Serial mode
- Generate one stream of telemetry formatted as EDUs when in IP mode
- Start or stop one or two telemetry stream*(s)*
- Ingest the PM-1 PDB files
- Generate telemetry packets from information contained in the PM-1 PDB
- Maintain telemetry nodes from information contained in the PM-1 PDB
- Populate telemetry packets with data values from information contained in the PM-1 PDB
- Generate correct secondary headers for SC, GIRD, and SUROM-TIE (no secondary header) telemetry packets using information from the PDB
- Generate instrument telemetry packets using secondary key information from the PDB
- Display EDU data when in IP mode
- Display CADU data when in Serial mode
- Set values into telemetry points by mnemonic
- Display telemetry node values by mnemonic
- Reset packet count for the telemetry stream
- Static packet data can be overwritten (by byte location) and by modification of telemetry mnemonic
- Incrementing packet sequence counters per APID
- Generation of individual APIDs can be inhibited
- Telemetry logs will be created (viewable by offline utility)
- Packet Headers and Packet Data are updated
- Packet data can be shown in hexadecimal or octal format and addressed in hexadecimal or decimal form
- Packet Sequence Counters can be reset
- Packet Sequence Counters can be modified
- Packet Version field can be modified
- Packet APID field can be modified
- Packet Type field can be modified
- Packet SH Flag field can be modified
- Packet Length field can be modified
- CUC can be modified
- Packet rate may be controlled
- CLCW transmitted via EDUs when in IP mode
- IP packets are transmitted with variable lengths

- CLCW can be overridden by the operator
- Transmission of CLCW can be inhibited when in IP mode
- Scenario file (script) capability to set telemetry nodes and buffers
- Set telemetry data values in response to spacecraft commands received (end-item verification)
- *Set initial telemetry data values at initialization*
- *Allow simultaneous display and set of multiple telemetry container items via GUI screen*
- *Simulate spacecraft memory dumps*
- *Use the PDB telemetry state text file to locate end-item verifier values*
- *Maintain and update telemetry data values in APID 1000*

Command:

- Ingest command-related PM-1 PDB files
- Identify commands using information from the PDB
- Display event messages with command mnemonics and submnemonics
- Set telemetry points in response to commands received (end-item verification) using information from the PDB
- Recognize spacecraft Command Loads
- Display Command Load data
- Ingest type AD, BC, and BD commands
- Display Total CLTUs count
- Reset Total CLTUs count
- Display Rejected CLTUs count
- Reset Rejected CLTUs count
- Display Instrument commands count
- Reset Instrument commands count
- Display Spacecraft commands count
- Reset Spacecraft commands count
- Display BC commands count
- Reset BC commands count
- Display BD commands count
- Display current Spacecraft CLCW
- Update Spacecraft and instrument CLCW
- Display current Instrument CLCW
- Validate commands based on individual, all, or none of the following validation criteria: CLTU Start and Tail Sequences, BCH Error Code, Transfer Frame Header Fields, FARM (Valid Frame Sequence), User Command Packet Header
- Generate event messages based on ingest
- Log raw commands (viewable by offline utility)
- Display raw command in hexadecimal or octal format addressed in either hexadecimal or decimal fashion

- Display command packet headers for instrument commands
- Display command packet headers for spacecraft commands
- *Update command accepted and rejected counters in telemetry*

Time:

- Maintain and update SC time (GIRD)
- Maintain and update GMT time
- Synchronize SC and GMT times
- *Maintain and update GIIS-formatted Day Segmented time for use in APID 1000*

Attachment C – Release 5.0 Installation Instructions

This attachment contains the instructions for installing the MPS/PM-1 Release 5.0 Server and Client.

NOTE

Release 5.0 is capable of using multiple packet list information from the PDB. Previous releases can only use information from the 16k Normal packet list. For this reason the PDB must be re-ingested into Oracle prior to initializing the simulator for the first time. The PDB database created by the new scripts is useable by previous versions of the simulator but will cause excessive error messages.

Instructions for installation of the PM-1 Server and Client software:

1. Insert the delivery media into the appropriate drive.

2. To install the PM-1 Client:
   a) On the desktop, click on the Start button, and then select Run from the resulting menu.
   b) When the Run window appears select the Browse… button.
   c) From the Browse Window, select the Removable drive that contains the installation disk
   d) Click on the Client folder.
   e) From within the Client folder, double click on the Setup.exe icon.
   f) The screen will be filled with a PM-1 Client background and a smaller window with the title "Welcome to PM-1 Client 5.0" will appear. Click on the Next button to proceed to the next step.
   g) The next window will contain the licensing agreement. Click on Yes to accept the agreement and proceed.
   h) After all of the files are copied, a window with the title "Setup Complete" will appear. Click on the Finish button to end.
   i) A PM-1 Client icon will now be installed on the desktop.

3. To install the PM-1 Server:
   a) On the desktop, click on the Start button, and then select Run from the resulting menu.
   b) When the Run window appears select the Browse… button.
   c) From the Browse Window, select the Removable drive that contains the installation disk
   d) Click on the Server folder.
   e) From within the Server folder, double click on the Setup.exe icon
   f) A window with the title "Run Window" will appear. Click on the Okay button to proceed to the next step.

g) The screen will then be filled with a PM-1 Server background and a window with the title of "Welcome to PM-1 Server 5.0" will appear. Click the Next button to proceed.

j) The next window will contain the licensing agreement. Click on Yes to accept the agreement and proceed.

h) Next a window will show the completion status as the files are copied. When the copying is complete click on the Finish button to finish the installation.

i) A PM-1 Server icon will be installed on the desktop.

Finally, copy the contents of the "Database" folder of the PM-1 Simulator CD to the "d:\pm1_db\scripts"folder, overwriting any existing files. See the instructions in Attachment D for re-ingesting the PDB.

Attachment D – Special Operating Instructions

This attachment contains the special operating instructions for MPS/PM-1 Release 5.0.

Standard operating procedures are included in the User's Guide for MPS/PM-1. The updated User's Guide for this release will be available from the ETS home page at http://esdis-it.gsfc.nasa.gov/ ETS/ets.html.

LOADING A NEW VERSION OF THE PDB

When a new version of the PDB is released, the current contents of the database must be erased and the new data loaded. You must erase the data, load the new PDB, and then configure it. This process involves the following steps:

NOTE
Limitations in the Sequel scripts require that the PDB files be placed in a specific directory for ingest into Oracle.
That directory is D:\pm1_db\pdb_data

1. Create a folder under the "pm1_db" folder to hold the new PDB flat files. A folder name something like "PDB_of_*<date>*" is suggested.

2. Copy the new PDB flat files from Toronto into the new folder.

3. Next, copy the new PDB files into generic-named files in the exact location shown below. If doing the copy in a DOS window use the following syntax example (NOTE that the PDB file has an imbedded date but the generic file doesn't):

    cp   tlm_packet_110899.pdb   D:\pm1_db\pdb_data\tlm_packet.pdb

    If using the drag and drop method, the files must be renamed after they are copied.

4. Open Windows Explorer and navigate to the *d:\pm1_db\scripts* folder.

5. Double-click on the .BAT file, *BUILDPM1.bat*, to execute it.

The new database is now fully loaded and configured. Examine each of the .LOG files in the *scripts* folder. The count of "Rows successfully loaded" in each should match the number of "Total logical records read". A mismatch indicates that some records of the corresponding PDB file were rejected. It will be necessary to determine whether those records are rejected for legitimate reasons. For example, currently three records of the tlm_packet PDB file are discarded because they are GBAD packets with VCID 3. It is suggested that you check the *scripts* folder for the presence of .BAD files, which would

indicate problems with the database flat files that the SQL scripts could not handle. Finally, to verify that the installation was successful, run the PM-1 simulator. Verify that messages appear in the event log indicating that the application was able to successfully connect to the database and retrieve packet and telemetry data.

STARTING AND STOPPING TELEMETRY TRANSMISSION

With Release 5, the MPS/Aqua simulator is able to differentiate between multiple telemetry packet lists. To provide maximum flexibility to the users, telemetry transmission is now controlled by scenario (script) files. During initialization the simulator disables all packets from transmission. To start transmission, the user must run a script file to enable the packets and set their transmit interval, then click on the Start menu item of the H/K button in the SCPM1 Control window. It is recommended that the script file that enables packet generation be run before starting transmission to ensure that packets are completely built before they are transmitted for the first time.

Three example script files have been provided. These are contained within the PM1 Server 5.0 folder. The three files are *Stop all APIDs.txt, Start 16k Packet List.txt,* and *Start 1k pkt list.txt*. These files may be used as is with the April 3, 2000, version of the PDB but may require modification to work properly with later versions.

If the users wish to develop their own script files to start and stop APID transmission, remember that a script to enable transmission of APIDs should contain two directive lines for every APID desired. The first directive should set the interval. The second is to enable transmission. The syntax is as follows, where the string 'xxxx' must be replaced by the four digit APID, with leading zeros as necessary. The string 'nn' must be replaced by the desired interval in seconds and fractions of seconds.

        set TlmPacketxxxxInterval nn
        set TlmPacketxxxxEnabled 1

Special Directions for setting intervals of APIDs containing a Secondary Key

The MPS/PM-1 simulator always interprets the packet interval to be the number of seconds (and fractions of a second) between transmissions of successive packets. In all versions of the PDB received to date, the interval of APIDs that have secondary keys has been given as the number of seconds between the transmission of packets with a given key value. Therefore, to get the correct interval to enter into MPS, divide the interval shown in the PDB by the total number of secondary key values. As an example, for APID 114 divide the interval of 64 seconds by 64 secondary key values and enter one(1) when setting the interval.

TELEMETRY DUMPS

A telemetry dump capability has been added in Release 5. To use it, pre-load the dump buffer with data, then execute the dump.

The dump buffer container name is SCPM1SCMemory. It is 6000 bytes long. Its contents default to an incrementing number where each byte's contents correspond to its offset from the beginning of the buffer (modulo 256).

Use SETBUFFER directives to load the dump buffer with desired data. As an example, the following directives will load the first 24 words of the buffer.

     setbuffer scpm1scmemory 0   word 2 4 6 8 10 12 14 16
     setbuffer scpm1scmemory 8 dword 1 3 5 7 9 11 13 15

To start the dump, either set up the dump parameters in the GUI dump initiate window, or enter the following set directives. These set directives may be entered from the directive window or included in a script file.

NOTES
1. The Dump Start Address is the simulated spacecraft address of the first word to be dumped. It will be copied into the dump packet as the starting address of the data in the packet, and incremented appropriately for each packet. The actual dump always begins with the first word of the SCPM1SCMemory buffer.
2. When entering directives to start a dump, the Dump Word Count MUST be entered last. The simulator will begin building and transmitting dump packets as soon as it receives this directive.

Directive Name	Function
SCPM1DumpStartAddress	First word of simulated spacecraft memory to be dumped.
SCPM1DumpInterval	Interval, in milliseconds, between dump packets. Default = 1000 (1 second)
SCPM1DumpPacketSize	The overall length of the packet in bytes, including the primary header. Default = 256 If the default is taken, each packet will contain 123 words of data if there is no secondary header, or 119 words of data if a secondary header is present.
SCPM1DumpAPID	APID, in decimal
SCPM1DumpSecondaryHeader	0 – no secondary header 1 – SC-type 8 byte secondary header Default = 0
SCPM1DumpWordCount	Number of 16 bit words to dump. No default.

APID 1000 Control

With Release 5, APID 1000 packets are populated with GIRD and GIIS times and a simulation of a VCDU Sequence Counter. The time field updates are updated automatically. The VCDU Sequence Counter telemetry data update rate is controlled by a new container variable, VCDURATE. This variable defaults to 16, representing the 16k byte GN data rate, and may be modified by the operator via set directives.

Each time APID 1000 is to be transmitted, the VCDU Sequence Counter telemetry data value is incremented by the product of VCDURATE and the APID 1000 interval. In order for the data value to increment the proper amount, VCDURATE must be set to the data rate being simulated. The nominal values for each data rate are:

Data Rate	VCDURATE value
16k	16
4k	4
1k	1

COMMAND COUNTER UPDATES

With Release 5, several spacecraft command counters are maintained and updated in the telemetry steam. Here is information on the command counters maintained, and instructions on how to change mnemonics. The command counter mnemonics have been taken from the April 3rd PDB. If the mnemonics change in newer versions of the PDB it is suggested that a scenario script be used to modify the command counter associations. See the last paragraph of this section for instructions.

A new container item was created to indicate whether TIE-A or TIE-B is online for the purpose of counting codeblocks. The name of the item is TIE_A_ACTIVE. It defaults to true (1) to indicate that TIE-A is online. To indicate that TIE-B is online, use an SCPM1 set directive to change its value to zero.

        set TIE_A_ACTIVE 0

Additional container items were added to define the telemetry mnemonics for command counters. A list of the command counters and their associated telemetry mnemonics are given below.

Container Name	Default Telemetry Mnemonic	Description
CommandCounter0	CDH_SS_TIECDBLKCNT	Valid codeblocks received while TIE-A is online
CommandCounter1	CDH_SS_THBCDBLKCNT	Valid codeblocks received while TIE-B is online
CommandCounter2	CDH_SS_TIECRITFRCT	Valid critical command frames for VCID 16
CommandCounter3	CDH_SS_THBCRITFRCT	Valid critical command frames for VCID 17
CommandCounter4	ISC_SS_ISCACPTCMDCNT	Valid commands received for APID 449-452 (ISC)
CommandCounter5	EPC_SS_EPCACPTCMDCNT	Valid commands received for APID 453-456 (PC)

CommandCounter6	GNC_SS_GNCACPTCMDCNT	Valid commands received for APID 457-460 (GNCC)
CommandCounter7	CTC_NS_CTCNACPCMDCNT	Valid commands received for APID 461-463 (CTC ONL)
CommandCounter8	CTC_NS_CTCFACPCMDCNT	Valid commands received for APID 464-466 (CTC OFL)
CommandCounter9	CDH_SS_ILLCMDCNTISC	Invalid commands received for APID 449-452 (ISC)
CommandCounter10	CDH_SS_ILLCMDCNTPC	Invalid commands received for APID 453-456 (PC)
CommandCounter11	CDH_SS_ILLCMDCNTGNC	Invalid commands received for APID 457-460 (GNCC)
CommandCounter12	CDH_SS_ILLCMDCNTCTCN	Invalid commands received for APID 461-463 (CTC ONL)
CommandCounter13	CDH_SS_ILLCMDCNTCTCF	Invalid commands received for APID 464-466 (CTC OFL)

To check the telemetry mnemonic assigned to any counter use the get directive on the container name (see example below) and view the response in the event message region.

> get CommandCounter0

event message response: *CommandCounter0 = CDH_SS_TIECDBLKCNT*

To check that the telemetry mnemonic is a valid one, use a get directive on it as shown below. If the telemetry mnemonic exists, its current value will be shown. If it doesn't exist an error event message will be displayed.

> get CDH_SS_TIECDBLKCNT

event message response: *CDH_SS_TIECDBLKCNT = 25*

NOTES
If the name assigned to the command counter does not match an existing telemetry mnemonic, the associated count cannot appear in telemetry. For example, CDH_SS_ILLCMDCNTCTCN is stored for the illegal command counter for the online CTC, but this mnemonic is not in the April 3rd database. It is a guess based on the counter for the offline CTC.
The simulator maintains a 32 bit value for each counter. If the counter is defined in the database as 8 bits, only the least significant 8 bits are copied into the telemetry packet.

To change the telemetry mnemonic assigned to any counter, use the set directive as shown below.

> set CommandCounter0 CDH_SS_ABCDEF_123456

event message response: CommandCounter0 set to CDH_SS_ABCDEF_123456

Attachment E – Resolved Discrepancy Reports

The following Discrepancy Reports (DRs) and Change Requests (CRs) have been closed by and are being delivered with SIMSS/PM-1 Release 5.0. The DRs/CRs are listed in the table below, which provides the DR/CR Number, Status, Severity, and a short description. A full description of each DR/CR follows the summary table. Complete information on all DRs/CRs may be accessed via the Internet at address http://iree.gsfc.nasa.gov/ddts/.

Summary of Closed Discrepancy Reports

Critical (Severity 1)	Urgent (Severity 2)	Routine (Severity 3)	Change Requests	Total
0	4	5	1	10

Status Definitions

N - New	A - Assigned Analysis	R - Analysis Entered
V - Assigned Verification	T - Tested	C - Closed
W - Withdrawn	P - Postponed	X - Duplicate

ETS No.	SMO No.	Type	Severity	Description
ETS0359	SMOdr05920	DR	3	Server crashes on exit
ETS0361	SMOdr05922	DR	3	Packet contents do not reflect initial telemetry values
ETS0364	SMOdr05925	DR	3	Enabling an APID changes the transmit frequency
ETS0387	SMOdr06563	DR	2	PC instability
ETS0388	SMOdr06603	DR	2	Database ingest problem
ETS0389	SMOdr06630	DR	3	Secondary Key edit
ETS0390	SMOdr06631	DR	2	scenario module causing crashes
ETS0391	SMOdr06632	DR	2	Command validation
ETS0393	SMOdr06634	DR	3	Command Validation criteria unpredictable
ETS0397	SMOdr06821	CR	3	Data population of APID 1000

```
DR:   ETS0359            Related NCR:                    Submitted: 991217
Status: ASSIGNED-ANALYSIS    Class: ETS           Asgnd-Analysis: 000117

  Title: Server crashes on exit
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:       ETS                      Assignee1/Org: Ernest Quintin
 Rel/Ver:       3.0                      Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua              Email: equintin@csc.com
 Test Phase:    acceptance test         Assignee2/Org:
 Severity:      3                        Phone:
 Date found:    991213                   Email:
 Location:      GSFC                     Date due (Sev=1,2):
 Submitter:     Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:      equintin@csc.com

************ Problem (Added 991217 by equintin) ***********
Normal shutdown of the MPS/PM-1 simulator is to disconnect the
client (GUI) from the server, exit the client, then exit the
server.  The server crashes when it is disconnected from the
client, or when the client is exited.

There is no operational impact because the crash only happens
during shutdown.


Resolution: Corrected the shutdown sequence of the GS module.
```

```
DR:   ETS0361              Related NCR:                      Submitted: 991217
Status: ASSIGNED-ANALYSIS   Class: ETS               Asgnd-Analysis: 000117

  Title: Packet contents do not reflect initial telemetry values
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:       ETS                      Assignee1/Org: Ernest Quintin
 Rel/Ver:       3.0                      Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua              Email: equintin@csc.com
 Test Phase:    acceptance test         Assignee2/Org:
 Severity:      3                        Phone:
 Date found:    991213                   Email:
 Location:      GSFC                     Date due (Sev=1,2):
 Submitter:     Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:     equintin@csc.com


************* Problem (Added 991217 by equintin) ***********
Initial telemetry packet data contents do not correspond to
initial telemetry data values.  Telemetry point initial values
are all set to zero;  the telemetry packets initially contain an
incrementing byte count.


************* Admin Comment (Modified 000117 by eshurie) ***********
Per 01/14/2000 DRB meeting, this is now planned for a later
release (not 4), which will include initial telemetry values.


Resolution: Included code to set initial telemetry values into Release 5.
```

```
DR:    ETS0364              Related NCR:                    Submitted: 991217
Status: ASSIGNED-ANALYSIS   Class: ETS              Asgnd-Analysis: 000117

  Title: Enabling an APID changes the transmit frequency
SUBMITTAL INFORMATION                   ANALYSIS INFORMATION
 Project:       ETS                      Assignee1/Org: Ernest Quintin
 Rel/Ver:       3.0                      Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua              Email: equintin@csc.com
 Test Phase:    acceptance test         Assignee2/Org:
 Severity:      3                        Phone:
 Date found:    991217                   Email:
 Location:      GSFC                     Date due (Sev=1,2):
 Submitter:     Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:      equintin@csc.com


************ Problem (Added 991217 by equintin) ***********
When you enable or disable an APID with the Control Packet
panel, the transmission frequency also gets modified to
whatever value is in the panel. If the panel's default value
(0.0) is still displayed, the transmission rate gets changed
to 0.1 (ten per second). To avoid this behavior, the user must
know what the current rate is (from PDB files or database)
and then set the rate to the desired value. Should be able to
enable or disable an APID without worry about the transmission
rate.



************ Admin Comment (Added 000117 by eshurie) ***********
(Per 01/14/2000 DRB meeting, workaround requires knowing the
transmit rates and setting them manually.)

Resolution:

Modified the GUI display to include separate controls for Packet Enable/Disable and transmit
rate.
```

```
DR:   ETS0387              Related NCR:                      Submitted: 000320
Status: ASSIGNED-ANALYSIS   Class: ETS              Asgnd-Analysis: 000331


  Title: PC instability
SUBMITTAL INFORMATION                      ANALYSIS INFORMATION
 Project:       ETS                        Assignee1/Org: Ernest Quintin
 Rel/Ver:       3.10                       Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua                Email: equintin@csc.com
 Test Phase:    unit test                  Assignee2/Org:
 Severity:      2                          Phone:
 Date found:    000320                     Email:
 Location:      Denver                     Date due (Sev=1,2):
 Submitter:     Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:      vhruland@west.raytheon.com


************ Problem (Added 000320 by vruland) ***********
MPS PC has been crashing due to virtual memory problems, now ORACLE is exceeding
the physical memory available at bootup.  Unable to use simulator at this time.

************ Admin Comment (Added 000331 by eshurie) ***********
Per 3/31/00 DRB meeting, this DR was accepted as a Severity 2
instead of 1 since there is a workaround.  It is also less of a
problem in version 4.0.



Resolution:

Modified the Oracle memory usage settings.
```

```
DR:   ETS0388              Related NCR:                    Submitted: 000328
Status: ASSIGNED-ANALYSIS      Class: ETS              Asgnd-Analysis: 000331


 Title: Database ingest problem
SUBMITTAL INFORMATION                ANALYSIS INFORMATION
 Project:      ETS                    Assignee1/Org: Ernest Quintin
 Rel/Ver:      4.0                    Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua            Email: equintin@csc.com
 Test Phase:   unit test             Assignee2/Org:
 Severity:     2                      Phone:
 Date found:   000327                Email:
 Location:     Denver                Date due (Sev=1,2):
 Submitter:    Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:     vhruland@west.raytheon.com


************* Admin Comment (Added 000331 by eshurie) ***********
Per 3/31/00 DRB meeting, this DR was accepted as a Severity 2
instead of 1 since there is a workaround.

************* Problem (Modified 000331 by eshurie) ***********
The 4.0 version of the SIMSS software will not properly ingest
the 3/17 TRW database.  This problem is severe and has nearly
stopped testing of EMOS software.


Resolution: Provided new database ingest scripts with Release 5.
```

```
DR:   ETS0389              Related NCR:                    Submitted: 000404
Status: ASSIGNED-ANALYSIS    Class: ETS              Asgnd-Analysis: 000414


  Title: Secondary Key edit
SUBMITTAL INFORMATION                     ANALYSIS INFORMATION
 Project:       ETS                        Assignee1/Org: Ernest Quintin
 Rel/Ver:       4.0                        Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua                Email: equintin@csc.com
 Test Phase:    unit test                  Assignee2/Org:
 Severity:      3                          Phone:
 Date found:    000330                     Email:
 Location:      Denver                     Date due (Sev=1,2):
 Submitter:     Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:      vhruland@west.raytheon.com


************* Problem (Added 000404 by vruland) ***********
When using the Display Packet window from the SC modules control
window, changing the value fo the secondary key doesn't ungray
the Apply button.  Another box must be modified before one can
apply the changes.

This button should ungray itself when there is a change to any of
the boxes on the Display Packet window.


************* Admin Comment (Added 000414 by eshurie) ***********
4/14/00 Per E. Quintin, a fix is planned for this in Release 5.0.


Resolution: Changing the value of the secondary key now ungrays the Apply button.
```

```
DR:    ETS0390              Related NCR:                      Submitted: 000404
Status: ASSIGNED-ANALYSIS   Class: ETS              Asgnd-Analysis: 000414


  Title: scenario module causing crashes
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:       ETS                      Assignee1/Org: Ernest Quintin
 Rel/Ver:       4.0                      Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua              Email: equintin@csc.com
 Test Phase:    unit test               Assignee2/Org:
 Severity:      2                        Phone:
 Date found:    000331                   Email:
 Location:      Denver                   Date due (Sev=1,2):
 Submitter:     Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:      vhruland@west.raytheon.com


************ Problem (Added 000404 by vruland) ***********
When configuring a scenario module, leaving the filename box
blank and clicking the Apply button crashes the MPS server.

The MPS server shouldn't crash, an error message should be
displayed instead, prompting the user for a valid filename.


************ Admin Comment (Added 000414 by eshurie) ***********
4/14/00 DRB meeting:
Per E. Quintin, fix for this is already done and ready
for testing.  Will be included in Release 5.0.


Resolution: A check for non-null filename was added to the scenario module.
```

```
DR:   ETS0391              Related NCR:                        Submitted: 000404
Status: ASSIGNED-ANALYSIS   Class: ETS                    Asgnd-Analysis: 000414
```

  Title: Command validation

```
SUBMITTAL INFORMATION                        ANALYSIS INFORMATION
 Project:      ETS                           Assignee1/Org: Ernest Quintin
 Rel/Ver:      4.0                           Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua                   Email: equintin@csc.com
 Test Phase:   unit test                     Assignee2/Org:
 Severity:     2                             Phone:
 Date found:   000331                        Email:
 Location:     Denver                        Date due (Sev=1,2):
 Submitter:    Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:      vhruland@west.raytheon.com
```

************ Problem (Added 000404 by vruland) ***********
The MPS is only successfully cross-referencing four commands
being received by EMOS. The commands that are being validated
properly are BC commands and the mnemonics are following:

```
CDH_SET_VC0SWQNUM
CDH_SET_VC0UNLOCK
CDH_SET_VC1SEQNUM
CDH_SET_VC1UNLOCK
```

BC type commands differ from other commands in that they can end
on byte boundaries instead of word boundaries. As a result, BC
type command lengths are listed in the CMD_FIXED_DATA.pdb
database file as (Absolute # of bytes - 1). All other types of
commands are listed as (Absolute # of words - 1). We are unsure
how the MPS interprets this field.

************ Admin Comment (Added 000414 by eshurie) ***********
4/14/00 DRB meeting: Per E. Quintin this will be corrected in
Release 5.0.

Resolution: Provided new database ingest scripts with Release 5.

```
DR:   ETS0393              Related NCR:                    Submitted: 000404
Status: ASSIGNED-ANALYSIS     Class: ETS              Asgnd-Analysis: 000414

  Title: Command Validation criteria unpredictable
SUBMITTAL INFORMATION                   ANALYSIS INFORMATION
 Project:      ETS                       Assignee1/Org: Ernest Quintin
 Rel/Ver:      4.0                       Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua               Email: equintin@csc.com
 Test Phase:   unit test                 Assignee2/Org:
 Severity:     3                         Phone:
 Date found:   000331                    Email:
 Location:     Denver                    Date due (Sev=1,2):
 Submitter:    Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email:     vhruland@west.raytheon.com
```

************ Problem (Added 000404 by vruland) ***********
We have observed the MPS validating (i.e. incrementing FSN count)
when receiving commands even though the validation criteria has
no selections made. The simulator seemed to be validating some,
but not all commands via FSN increments when in this mode. After
setting validation criteria to "all" the performance became more
predictable and the sim seemed to be "validating" all commands
via the FSN incrementing in the CLCW. (Even though the activity
log indicated the MPS didn't recognize most commands).

************ Admin Comment (Added 000414 by eshurie) ***********
Per developer at 4/14/00 DRB meeting, there is a simple fix for
this. Release 5.0 will display current status at all times.

Resolution:

The GUI command validation display now tracks and displays the command validation status at
all times.

```
DR:    ETS0397              Related NCR:                 Submitted: 000502
Status: NEW                 Class: ETS
```

  Title: Data population of APID 1000
SUBMITTAL INFORMATION
 Project: ETS
 Rel/Ver: 6.0
 Subsystem: MPS-PM/Aqua
 Test Phase: unit test
 Severity: 3
 Date found: 000427
 Location: Denver
 Submitter: Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email: vhruland@west.raytheon.com

************ Problem (Added 000502 by vruland) ***********
It would be very beneficial to development testing to have APID
1000 populated with GIIS and GIRD S/C times as outlined in the
Space to Ground ICD. Both Arm and Epoch times are needed for
performing USCCS clock correlation testing.

Resolution: Added code to update the telemetry parameters of APID 1000.

Attachment F – Unresolved Discrepancy Reports

All open MPS-PM/Aqua Discrepancy Reports (DRs) and Change Requests (CRs) are listed in the following table. The table includes the DR/CR Number, Status, Severity, and a short description. A full description of each DR/CR follows the summary table. Complete information on all DRs/CRs may be accessed via the Internet at http://iree.gsfc.nasa.gov/ddts/.

Summary of Open Discrepancy Reports

Critical (Severity 1)	Urgent (Severity 2)	Routine (Severity 3)	Change Request (CR)	Total
0	1	5	0	6

Status Definitions

N – New	A - Assigned Analysis	R - Analysis Entered
V - Assigned Verification	T – Tested	C – Closed
W – Withdrawn	P – Postponed	X – Duplicate

ETS #	SMO No.	Type	Severity	Description
ETS0338	SMOdr05701	DR	3	PM MPS sim window management
ETS0343	SMOdr05706	DR	3	removing links
ETS0363	SMOdr05924	DR	3	Telemetry data values entered by operator are not validated
ETS0378	SMOdr06292	DR	3	Packet Sequence count anomaly
ETS0379	SMOdr06294	DR	2	Cannot use two output modules for same output
ETS0392	SMOdr06633	DR	3	Loading database

```
DR:    ETS0338              Related NCR:              Submitted: 991103

Status: ASSIGNED-ANALYSIS    Class: ETS              Asgnd-Analysis: 991217

  Title: PM MPS sim window management
SUBMITTAL INFORMATION                      ANALYSIS INFORMATION
 Project:      ETS                         Assignee1/Org: Ernest Quintin
 Rel/Ver:      2.1                         Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua                 Email: equintin@csc.com
 Test Phase:   unit test                   Assignee2/Org:
 Severity:     3                           Phone:
 Date found:   991101                      Email:
 Location:     Denver                      Date due (Sev=1,2):
 Submitter:    Vince Ruland
 Organization: ETS
 Phone number: 720-895-4068
 Email:    vhruland@west.raytheon.com
```

************ Problem (Added 991103 by vruland) ***********
Any window brought up or opened will desappear behind the main project screen
as soon as it's clicked on. In order to have access to these windows, we
have to ensure that a portion of the windows are visible outside of the main
screen so they can be clicked on. Suggest a better window management akin to
a "start" menu bar in windows that allows the user to select any window at
any time, whether it is buried under other windows or not.

************ Analysis Info (Added 991221 by eshurie) ***********
Information provided by E. Noone 12/17/99:

Window management is controlled by Win NT. Clicking on the
icon in the task bar (which is usually at the bottom of the
screen) will get the window to pop to the front.

Initial indication is that no software change may be required.

DR: ETS0343   Related NCR: Submitted: 991103

Status: ASSIGNED-ANALYSIS   Class: ETS   Asgnd-Analysis: 991109

  Title: removing links
SUBMITTAL INFORMATION   ANALYSIS INFORMATION
 Project: ETS   Assignee1/Org: Ernest Quintin
 Rel/Ver: 2.1   Phone: 301-805-3649
 Subsystem: MPS-PM/Aqua   Email: equintin@csc.com
 Test Phase: unit test   Assignee2/Org:
 Severity: 3   Phone:
 Date found: 991029   Email:
 Location: Denver   Date due (Sev=1,2):
 Submitter: Vince Ruland
 Organization: ETS
 Phone number: 720-895-4068
 Email: vhruland@west.raytheon.com

************ Problem (Added 991103 by vruland) ***********
There should be an easier way to remove an incorrect link or a link made in
error rather than going into the design mode to delete it. After the link is
deleted, the create links mode has to be re-entered in order to continue
creating links.

************ Admin Comments (Added 991109 by eshurie) ***********
Per DRB meeting (11/8/99), the developers stated that the changes
needed for this enhancement will be very involved.

```
DR:    ETS0363              Related NCR:              Submitted: 991217

Status: ASSIGNED-ANALYSIS    Class: ETS              Asgnd-Analysis: 000117

  Title: Telemetry data values entered by operator are not validated
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:      ETS                       Assignee1/Org: Ernest Quintin
 Rel/Ver:      3.0                       Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua               Email: equintin@csc.com
 Test Phase:   acceptance test          Assignee2/Org:
 Severity:     3                         Phone:
 Date found:   991217                    Email:
 Location:     GSFC                      Date due (Sev=1,2):
 Submitter:    Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:     equintin@csc.com

************ Problem (Added 991217 by equintin) ***********
No validation is being performed on the values entered in the
Set Directive Window. If the value entered exceeds the number
of bits specified for the telemetry point, high order bits are
truncated when the packet is built. If you enter a hex value,
the telemetry point gets set to zero. Binary values are
interpreted as decimal. In addition, the system does not notify
the user concerning the invalid entry
```

```
DR:    ETS0378              Related NCR:              Submitted: 000131

Status: ASSIGNED-ANALYSIS    Class: ETS              Asgnd-Analysis: 000202

  Title: Packet Sequence count anomaly
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:      ETS                        Assignee1/Org: Ernest Quintin
 Rel/Ver:      3.0                        Phone: 301-805-3649
 Subsystem:    MPS-PM/Aqua                Email: equintin@csc.com
 Test Phase:   unit test                 Assignee2/Org:
 Severity:     3                          Phone:
 Date found:   000128                     Email:
 Location:     Denver                     Date due (Sev=1,2):
 Submitter:    Vince Ruland
 Organization: ECS
 Phone number: 720-895-4068
 Email:    vhruland@west.raytheon.com


************ Problem (Modified 000202 by eshurie) ***********
When an APID's sequence count is manually edited, the next packet
output from the MPS simulator contains the edited number
incremented by one instead of the number entered in the edit
field.




************ Admin Comment (Modified 000202 by eshurie) ***********
(At 01/28/2000 DRB meeting, this DR was approved for Analysis in
advance of its imminent submittal to the DRTT.)
```

```
DR:    ETS0379              Related NCR:              Submitted: 000131

Status: ASSIGNED-ANALYSIS     Class: ETS              Asgnd-Analysis: 000215

  Title: Cannot use two output modules for same output
SUBMITTAL INFORMATION                      ANALYSIS INFORMATION
 Project:       ETS                        Assignee1/Org: Ernest Quintin
 Rel/Ver:       3.0                        Phone: 301-805-3649
 Subsystem:     MPS-PM/Aqua                Email: equintin@csc.com
 Test Phase:    IV&V                       Assignee2/Org:
 Severity:      2                          Phone:
 Date found:    000128                     Email:
 Location:      GSFC                       Date due (Sev=1,2):
 Submitter:     Hillary Shein
 Organization: I&T
 Phone number: 301-982-5414
 Email:    hshein@averstar.com


************ Problem (Added 000131 by hshein) ***********
I attempted to send duplicate telemetry to the PM EMOS system by
configuring two output modules to transmit the telemetry stream
coming from the simulator module.

When two output modules (with the same output stream) were present,
neither output module transmitted data.  When the second output
module was removed, the original output module transmitted data
as expected.

This does not cause a problem with two output modules in the
"normal" configuration (one for telemetry and one for CLCW's).
```

```
DR:    ETS0392                Related NCR:              Submitted: 000404
Status: NEW                   Class: ETS
```

  Title: Loading database
SUBMITTAL INFORMATION
 Project: ETS
 Rel/Ver: 4.0
 Subsystem: MPS-PM/Aqua
 Test Phase: unit test
 Severity: 3
 Date found: 000331
 Location: Denver
 Submitter: Vince Ruland
 Organization: EMOS
 Phone number: 720-895-4068
 Email: vhruland@west.raytheon.com

************ Problem (Added 000404 by vruland) ***********
Please describe the problem you are experiencing below, including
what you did, what you expected to happen, and what actually happened:

A user should be able to load a new version of the database into
the SC module without having to cycle the entire project first.

Whenever the apply button is clicked for the Load Database on a
SC module, the previous instance of the database should be purged
before the module loads the new instance.

************ Admin Comment (Added 000414 by eshurie) ***********
Per DRB on 4/14/00, this DR is on HOLD pending further
contemplation of it by Denver. (Would not be able to be
done within a week.)

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMCMD-01	1	SIMSS/PM-1 shall be capable of receiving command data as UDP command blocks.
PMCMD-02	1	SIMSS/PM-1 shall be capable of configuring command receipt processing in IP mode.
PMCMD-02.01	1	SIMSS/PM-1 shall be capable of configuring IP mode command receipt to UDP MULTICAST mode.
PMCMD-02.02	1	SIMSS/PM-1 shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST IP address.
PMCMD-02.03	1	SIMSS/PM-1 shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST Port number.
PMCMD-02.04	1-U	SIMSS/PM-1 shall be capable of configuring IP mode command receipt to any block length between one and 6000 bytes.
PMCMD-03	1	SIMSS/PM-1 shall accept operator directives that enable or disable the following elements of the command validation process: Codeblock BCH Parity Validation, Transfer Frame Header Validation, FARM Protocol Validation, and User Command Packet Header Validation.
PMCMD-03.01	1	When the Codeblock BCH parity validation element is enabled, the command subsystem will verify for each codeblock of each received CLTU that the BCH parity byte matches a computed value and that the spare bit is equal to zero. If any codeblock of a CLTU fails validation, an event message will be generated and that entire CLTU will be discarded. When this element is disabled, the parity byte will be assumed to be valid.
PMCMD-03.02	1	When the Transfer Frame Header validation element is enabled, the command subsystem will verify that all of the fields of the Transfer Frame header, except the sequence number, match expected values and ranges as defined in the ICD. If the Transfer Frame Header validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame header values will be assumed to be valid.
PMCMD-03.03	1	When the FARM validation element is enabled, the command subsystem will verify that the Transfer Frame sequence number is valid as expected for FARM-1 protocol as defined in the ICD. If the FARM validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame sequence number will be assumed to be valid.
PMCMD-03.04	1	When the Command Packet Header validation element is enabled, the command subsystem will verify that the Command Packet Header fields contain valid values as defined in the ICD. If the Command Packet Header validation fails, an event message will be generated and the Command Packet will be discarded. This requirement is applicable to the spacecraft command packet format and the instrument command packet format. When this element is disabled, the Command Packet Header is assumed to be valid.
PMCMD-04	2	SIMSS/PM-1 shall accept operator directives to change all fields of the spacecraft and instrument CLCWs.
PMCMD-05	2	SIMSS/PM-1 shall simulate spacecraft command acceptance according to the COP-1 protocol.
PMCMD-05.01	2	SIMSS/PM-1 shall perform Type AD spacecraft command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.
PMCMD-05.01.1	2	SIMSS/PM-1 shall reject Type AD spacecraft commands and post a command rejected event message if the Lockout bit is set in the spacecraft CLCW.

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMCMD-05.01.2	2	SIMSS/PM-1 shall reject Type AD spacecraft commands, post a command rejected message, and set the Lockout bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.01.3	2	SIMSS/PM-1 shall reject Type AD spacecraft commands, post a command rejected message, and set the Retransmit bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the contents of the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.01.4	2	SIMSS/PM-1 shall reject Type AD spacecraft commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the contents of the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.01.5	2	SIMSS/PM-1 shall clear the spacecraft CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the spacecraft VCID.
PMCMD-05.01.6	2	SIMSS/PM-1 shall set the spacecraft CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the spacecraft VCID.
PMCMD-05.01.7	2	SIMSS/PM-1 shall increment the Report Value field (modulo 256) of the spacecraft CLCW upon receipt of a Type AD spacecraft command whose Frame Sequence Count matches the current spacecraft CLCW Report Value field contents, provided that FARM-1 protocol checking is enabled.
PMCMD-05.02	2	SIMSS/PM-1 shall perform Type AD instrument command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.
PMCMD-05.02.1	2	SIMSS/PM-1 shall reject Type AD instrument commands and post a command rejected event message if the Lockout bit is set in the instrument CLCW.
PMCMD-05.02.2	2	SIMSS/PM-1 shall reject Type AD instrument commands, post a command rejected message, and set the Lockout bit in the instrument CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.02.3	2	SIMSS/PM-1 shall reject Type AD instrument commands, post a command rejected message, and set the Retransmit bit in the instrument CLCW, if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.02.4	2	SIMSS/PM-1 shall reject Type AD instrument commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.
PMCMD-05.02.5	2	SIMSS/PM-1 shall clear the instrument CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the instrument VCID.

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMCMD-05.02.6	2	SIMSS/PM-1 shall set the instrument CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the instrument VCID.
PMCMD-05.02.7	2	SIMSS/PM-1 shall increment the Report Value field (modulo 256) of the instrument CLCW upon receipt of a Type AD instrument command whose Frame Sequence Count matches the current instrument CLCW Report Value field contents, providing that FARM-1 protocol checking is enabled.
PMCMD-06	1	SIMSS/PM-1 shall provide the capability to monitor and display command processing status.
PMCMD-07	1	Upon operator request, SIMSS/PM-1 shall store received commands for posttest review subject to specified storage capacities.
PMCMD-08	3.1	SIMSS/PM-1 shall use information from the PDB to perform command identification processing. The Command subsystem shall match command bit patterns received to stored bit patterns to locate command mnemonics in the PDB.
PMCMD-09	4	SIMSS/PM-1 shall provide the capability to respond to that subset of spacecraft commands that are defined in the PM-1 PDB Command Execution Verification (CEV) file. If the PDB CEV file contains end-item verifier telemetry mnemonics associated with the identified command, the associated telemetry point(s) will be set to the corresponding value(s) defined in the CEV file.
PMCMD-10		SIMSS/PM-1 shall generate a simulator event message whenever a command is received.
PMCMD-10.01	3.1	SIMSS/PM-1 shall generate a simulator event message to display the command mnemonic whenever a valid command is decoded.
PMCMD-10.02	3.1	SIMSS/PM-1 shall generate a simulator event message to display the values of command submnemonics whenever a command containing submnemonics is decoded.
PMCMD-11	1	SIMSS/PM-1 shall generate a simulator event message whenever a command error is detected
PMCMD-11.01	3.1	SIMSS/PM-1 shall generate a simulator event message indicating the command error detected whenever a command in error is decoded, provided that command validation is enabled.
PMCMD-11.02	3.1	SIMSS/PM-1 shall generate an event message indicating that an unknown command has been received whenever a command cannot be matched to any PDB entry.
PMCMD-12	Post-5	SIMSS/PM-1 shall execute operator directives that set the expected values within the Command Data Block (CDB) header.
PMCMD-13	4P,5	SIMSS/PM-1 shall receive spacecraft memory and table loads from an external source and shall store the load data in simulated spacecraft memory.
PMCMD-14	Post-5	SIMSS/PM-1 shall perform a CRC validation in the load data and shall set a pass/fail indicator in telemetry. ***More information is needed.***
PMCMD-15	5	SIMSS/PM-1 shall process commands that request or configure for a spacecraft memory dump.
PMCMD-16	1	SIMSS/PM-1 interface with EOC shall comply with the command interface formats and protocols specified in the EDOS to EGS Elements interface document
PMCMD-17	5	SIMMS/PM-1 shall be capable of updating multiple command counters in telemetry. The command counters to be updated shall be as agreed upon with PM-1 project representatives.

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMCMD-18	1	SIMMS/PM-1 shall interpret VCID 0 (spacecraft), VCID 1 (instrument), and VCID 16 and 17 (TIE critical) commands.
PMCMD-19	Post-5	SIMMS/PM-1 shall interpret multipart commands. ***More information is needed.***
PMCMD-20	1	SIMSS/PM-1 shall be capable of logging up to 8 MB of received commands during a testing session.
PMCMD-21	4	SIMSS/PM-1 shall receive spacecraft commands in a CLTU bitstream through the serial interface at rates from 125 bps to 2 Kbps.
PMGEN-01	1	The SIMSS/PM-1simulator shall be Year 2000 compliant
PMGEN-02	1	The SIMSS/PM-1 GUI shall set the simulated spacecraft time as directed by the operator.
PMGEN-03	4	The SIMSS/PM-1 simulator shall be capable of executing a scenario script file.
PMGEN-03.01	4	The SIMSS/PM-1 simulator shall be capable of executing operator directives via a scenario script to update telemetry parameters by mnemonic.
PMGEN-03.02	5	The SIMSS/PM-1 simulator shall be capable of executing operator directives via a scenario script to retrieve and display the value of any telemetry parameter by mnemonic.
PMGEN-03.03	4	The SIMSS/PM-1 simulator shall be capable of executing operator directives via a scenario script to start and stop telemetry transmission.
PMGEN-03.04	4	The SIMSS/PM-1 simulator shall be capable of executing operator directives via a scenario script to start and stop transmission of CLCW packets.
PMGEN-03.05	4	The SIMSS/PM-1 simulator shall be capable of executing operator directives via a scenario script to enable and disable all elements of command validation that are under operator control. See "PMCMD" requirements for those command validation elements that are controllable by the operator.
PMGEN-04	4	SIMSS/PM-1 shall be capable of providing files of received or generated test data on electronic and physical media.
PMGEN-05	1	SIMSS/PM-1 GUI shall acknowledge an operator request within 2 seconds of its entry.
PMGEN-06	1	SIMSS/PM-1 GUI shall start execution of an operator request within 5 seconds of its entry.
PMGEN-07	1	SIMSS/PM-1 shall be capable of maintaining an internal time code to a resolution of 200 milliseconds.
PMGEN-08	1	SIMSS/PM-1 shall comply with the set of display guidelines specified in DSTL-92-007, Human-Computer Interface Guidelines, August, 1992.
PMGEN-09	1	SIMSS/PM-1 shall comply with security provisions specified in the NASA Automated Information Security Handbook, NHB 2410.9A.
PMGEN-10	1	SIMSS/PM-1 shall comply with the NASA Communications (Nascom) Access Protection Policy and Guidelines.
PMGEN-11	1	SIMSS/PM-1 shall provide a hard disk drive with sufficient capacity to store the program bootstrap, executable files, and other simulation environment files, such as the Project Data Base and scenario files used during tests, and a TBD percent reserve.
PMGEN-12	1	SIMSS/PM-1 shall provide a physical media storage device that can be used to support the exchange of small amounts of information with external systems and for system backups and data logging.
PMGEN-13	1	SIMSS/PM-1 shall be portable.

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMGEN-14	1	SIMSS/PM-1 shall provide an Ethernet interface that conforms to 10BaseT of the IEEE 802.3 standard.
PMGEN-15	1	SIMSS/PM-1 shall interface with the EOC through the Ethernet interface using the Internet Protocol (IP) suite, including TCP/IP and UDP/IP.
PMGEN-16	1	SIMSS/PM-1 shall receive CLTUs in command data blocks from the EOC and output EDUs (packets and CLCWs) to the EOC through the Ethernet interface. All data transfers through this Ethernet interface are based on UDP/IP protocol.
PMGUI-01	1-U	The SIMSS/PM-1 simulator shall accept and validate all operator directives.
PMGUI-02	1	The SIMSS/PM-1 GUI shall provide the capability to display command packets received.
PMGUI-03	1	The SIMSS/PM-1 GUI shall provide the capability to display telemetry and CLCW packets transmitted.
PMGUI-04	1	The SIMSS-PM-1 GUI shall provide the capability to display command and telemetry status.
PMGUI-05	1	The SIMSS/PM-1 GUI shall provide the capability to display the current receive and transmit network configuration to the operator.
PMGUI-06	1	SIMSS/PM-1 shall accept and execute operator directives that set spacecraft time and GMT.
PMGUI-07	1	SIMSS/PM-1 shall provide the capability to display the EDOS Service Header appended to transmitted telemetry packets.
PMGUI-08	1	SIMSS/PM-1 shall provide the capability to display the Telemetry Packet Header of a selected APID.
PMGUI-09	1	SIMSS/PM-1 shall provide the capability to display GMT and Spacecraft Times.
PMGUI-10	2	SIMSS/PM-1 shall provide the capability to display the current values of the spacecraft and instrument CLCWs.
PMGUI-11	1	SIMSS/PM-1 shall provide the capability to display event messages.
PMGUI-12	1	SIMSS/PM-1 shall provide the capability to display telemetry and CLCW transmit status.
PMGUI-13	1	SIMSS/PM-1 shall provide the capability to display command receipt status.
PMGUI-14	1	SIMSS/PM-1 shall be capable of updating all displays periodically.
PM-INIT-01	Post-5	SIMSS/PM-1 shall be capable of selecting a desired version of the PDB at operator request during initialization.
PM-INIT-01.01	Post-5	During initialization, the SIMSS/PM-1 simulator shall be capable of querying an Oracle database to determine which versions of the PM-1 PDB are available. The version information returned from the database shall be displayed to the operator.
PM-INIT-01.01	Post-5	During initialization, the SIMSS/PM-1 simulator shall provide the operator with the capability to select one version of the PM-1 PDB from among those that are resident within the Oracle database.
PM-INIT-01.01	Post-5	During initialization, if the operator does not select a version of the PM-1 PDB, the SIMSS/PM-1 simulator will default to the most recent version available in the database.
PMMDL-01	Post-5	SIMSS/PM-1 shall provide a telemetry parameter orbit modeling capability. The purpose of this capability is to simulate the behavior of a limited set of telemetry parameters on an orbit basis. ***More information is needed.***
PMMDL-02	Post-5	SIMSS/PM-1 shall turn on and off selected orbit modeling under operator control.
PMMDL-03	Post-5	SIMSS/PM-1 shall be capable of changing between static, table, or algorithm models under operator control
PMMDL-04	Post-5	SIMSS/PM-1 shall execute modeling directives that enable or disable selected orbit modeling.
PMMDL-05	Post-5	SIMSS/PM-1 shall execute modeling directives that associate any telemetry parameter with any predefined model.

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMMDL-06	Post-5	SIMSS/PM-1 shall execute modeling directives that change between static, table, or algorithm models.
PMMDL-07	Post-5	SIMSS/PM-1 shall provide the operator with an offline capability to access model functions and coefficients.
PMMDL-08	Post-5	SIMSS/PM-1 shall provide the operator with an offline capability to translate ASCII-formatted files containing static, table, and algorithm orbit modeling information into a binary form readable by SIMSS/PM-1 simulator.
PMTLM-01	4	SIMSS/PM-1 shall be capable of switching between IP and serial modes of operation for command receipt and telemetry transmission.
PMTLM-02	1,3	SIMSS/PM-1 shall provide the capability to transmit one stream of telemetry when in IP mode.
PMTLM-03	3	SIMSS/PM-1 shall be capable of independently configuring telemetry and CLCW transmit when in IP mode.
PMTLM-03.01	2,3	SIMSS/PM-1shall be capable of transmitting packets containing CLCWs independently of telemetry transmission when in IP mode
PMTLM-03.01	1	SIMSS/PM-1 shall be capable of independently configuring IP mode telemetry and CLCW transmission to UDP MULTICAST mode when in IP mode.
PMTLM-03.02	1	SIMSS/PM-1 shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST IP address when in IP mode.
PMTLM-03.03	1	SIMSS/PM-1 shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST Port number when in IP mode.
PMTLM-03.04	1	SIMSS/PM-1 shall be capable of independently configuring IP mode telemetry and CLCW transmission to any block length between one and 6000 bytes when in IP mode.
PMTLM-03.05	1	SIMSS/PM-1 shall be capable of independently configuring IP mode telemetry transmission to variable block length when in IP mode.
PMTLM-04	4	SIMSS/PM-1 shall be capable of transmitting two streams of CADUs (simulating the I and Q channels) when in serial mode.
PMTLM-04.01	4	When in serial mode, SIMSS/PM-1 shall build S-band CADUs as described in the PM-1 Spacecraft to Ground ICD.
PMTLM-04.02	4	When in serial mode, SIMSS/PM-1 shall build and transmit Fill CADUs as described in the PM-1 Spacecraft to Ground ICD when there is not enough telemetry data available to fill a CADU.
PMTLM-05	3	SIMSS/PM-1 shall accept and execute operator directives that set the value of any telemetry parameter by mnemonic.
PMTLM-06	5	SIMSS/PM-1 shall accept and execute operator directives that set the value of any location in the PM-1-simulated spacecraft memory.
PMTLM-07	3-U	SIMSS/PM-1 shall accept and execute operator directives that request the value of any telemetry parameter for display in raw data units.
PMTLM-08	1	SIMSS/PM-1 shall accept and execute operator directives that request the contents of any telemetry packet.
PMTLM-09	Post-5	SIMSS/PM-1 shall accept and execute operator directives that request the value of any location or block of locations in simulated spacecraft memory.
PMTLM-10	5	SIMSS/PM-1 shall set initial telemetry parameter values from information extracted from the PM-1 PDB and user provided files.

Attachment G – Requirements Matrix

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMTLM-11	1	SIMSS/PM-1 shall accept and execute operator directives that result in changes to telemetry packet header values.
PMTLM-12	Post-5	SIMSS/PM-1 shall execute telemetry directives that control the PM-1 Solid State Recorder. ***May not be needed.***
PMTLM-13	Post-5	SIMSS/PM-1 shall provide for the storage of housekeeping telemetry to be used as playback data.
PMTLM-14	4	SIMSS/PM-1 shall use the information from the PM-1 PDB to generate and transmit telemetry packets.
PMTLM-14.01	3	SIMSS/PM-1shall be capable of creating CCSDS-format telemetry packets from information contained in the PM-1 PDB telemetry packet specification file.
PMTLM-14.02	3-U	SIMSS/PM-1 shall provide the capability to generate and transmit telemetry packets with APIDs identical to the PM-1 spacecraft.
PMTLM-14.03	4	SIMSS/PM-1 shall use the APID and secondary key fields of the PM-1 PDB packet definition file to identify unique packets.
PMTLM-14.04	4	SIMSS/PM-1 shall generate a telemetry packet for each unique combination of APID and secondary key.
PMTLM-14.05	1,4	SIMSS/PM-1 shall accept and execute operator directives to set the packet generation rate for any APID and secondary key combination defined in the PM-1 PDB.
PMTLM-14.06	3	SIMSS/PM-1 shall populate the telemetry packet primary header fields in the following list in accordance with information obtained from the PM-1 Spacecraft to Ground ICD and applicable CCSDS documents: Version Number, Type, Secondary Header Flag, APID, Sequence Flag, Sequence Count, and Packet Length.
PMTLM-14.07	4	SIMSS/PM-1 shall place the secondary key into the telemetry packet at the offset specified by the PM-1 PDB telemetry packet specification file and shall use the number of bits specified by that file.
PMTLM-14.08	4	SIMSS/PM-1 shall generate a telemetry packet secondary header in accordance with the secondary header type (SC, GIRD, or None for SUROM-TIE packets) implied by the contents of the packet type field of the PM-1 PDB telemetry packet specification file. For each secondary header type, the contents shall be as described in applicable sections of the PM-1 Spacecraft to Ground ICD.
PMTLM-15	1	SIMSS/PM-1 shall insert simulated spacecraft time in the telemetry packet headers
PMTLM-16	3	SIMSS/PM-1 shall maintain data values for all telemetry parameters defined in the PDB telemetry parameter specification file. These data values shall be available for display to the operator and for inclusion into telemetry packets.
PMTLM-16.01	4	SIMSS/PM-1 shall be capable of inserting telemetry point values into packets using information from the PM-1 PDB telemetry description and telemetry parameter specification files.
PMTLM-16.02	4	SIMSS/PM-1 shall use the APID and secondary key fields of the PDB telemetry parameter specification file to determine the correct packet for each telemetry parameter.
PMTLM-17	3-U	SIMSS/PM-1 shall send out telemetry packets at specified intervals of spacecraft time. These specific intervals shall be as defined by the PDB for each APID and secondary key combination and shall be modifiable by the operator.
PMTLM-18	5	SIMSS/PM-1 shall be capable of simulating memory dumps. SIMSS/PM-1 shall build packets based on the contents of the simulated memory.
PMTLM-19	1	SIMSS/PM-1 shall execute telemetry directives that start and stop transmission of data.

PM-1 Requirement	Release	SIMSS/PM-1 Requirement Description
PMTLM-20	1	SIMSS/PM-1 shall accept and execute operator directives that start and stop logging of telemetry and CLCWs independently.
PMTLM-21	1	SIMSS/PM-1 shall generate EDUs and EDOS data headers based on the User Datagram Protocol (UDP) format defined in the EDOS External ICD Data Format Control Document.
PMTLM-22	Post-5	SIMSS/PM-1 shall allow modification of any field within the EDOS data header.
PMTLM-23	2	SIMSS/PM-1 shall provide the capability of transmitting the CLCW in the form of EDUs to EOC through EBnet.
PMTLM-24	2	SIMSS/PM-1 shall provide the capability to enable and disable the transmission of CLCW EDUs.
PMTLM-25	Post-5	SIMSS/PM-1 shall provide for the storage of EDUs which will be later used during the testing session for rate buffered file transmission, provided the user selected the rate buffered file telemetry generation mode.
PMTLM-26	1	SIMSS/PM-1 shall transmit EDUs on an as built basis.
PMTLM-27	1	SIMSS/PM-1 shall provide the capability to transmit EDUs using the UDP protocol.
PMTLM-28	Post-5	SIMSS/PM-1 shall provide the capability to transmit rate buffered files via FTP upon user request. *Needed?*
PMTLM-29	Post-5	SIMSS/PM-1 shall be capable of creating signal files and transmitting them via FTP at user request. *Needed?*
PMTLM-30	1	SIMSS/PM-1 interface with the EOC shall comply with the telemetry interface formats and protocols specified in the EDOS to EGS Elements interface document
PMTLM-31	5	SIMSS/PM-1 when acting as a spacecraft shall comply with the telemetry data formats and protocols specified in the TGT to EDOS interface document.
PMTLM-32	5	SIMSS/PM-1, when acting as an EPGS, shall comply with the telemetry data formats and protocols specified in applicable interface documents for the EPGS to EDOS interface.
PMTLM-33	Post-5	SIMSS/PM-1 shall provide the capability to accept PM-1 telemetry data by electronic transmission and by physical media.
PMTLM-34	Post-5	SIMSS/PM-1 shall be capable of transmitting the contents of a user provided file containing PM-1 telemetry data.
PMTLM-35	1	SIMSS/PM-1 shall be capable of maintaining an internally generated time code.
PMTLM-36	1	SIMSS/PM-1 shall set, adjust, and operate the spacecraft clock as commanded.
PMTLM-37	3	SIMSS/PM-1 shall employ an offline utility to convert the ASCII-formatted PDB into a binary format useable by SIMSS/PM-1.
PMTLM-38	Post-5	SIMSS/PM-1 shall use the PDB to define raw-to-EU conversions for telemetry parameters. SIMSS/PM-1 shall support both linear and polynomial conversions
PMTLM-39	1	SIMSS/PM-1 shall provide the capability to store up to 8MB of transmitted EDUs.

Attachment G – Requirements Matrix

Release Legend:

n – Release in which requirement was/is to be satisfied.
nP – Partially satisfied in Release n.
U – Ongoing; upgrades/changes in required functionality necessitate recode/retest.
Post – To be satisfied in a later release.

Attachment H – System Limitations

H.1 MPS/PM1 Release 5.0 Limitations

The following limitations apply to MPS/PM1 Release 5.0.

Problem Description	Workaround
Projects saved from a previous version of the simulator cannot be loaded under Release 5.0	All saved projects must be rebuilt and resaved using Release 5.0.
Log modules do not allow a user to stop and restart logging to the same file. Each start/restart requires a new log file name or the previously logged data will be overwritten.	In order to save previously logged data, always specify a new log file before starting or restarting a log module.
The validation of the CLTU start and tail sequences cannot be disabled. A change in the design requires the simulator to parse the input buffer for CLTUs. The start and tail sequences are the delimiters.	This should not be problem unless the commands sent by the user do not have a CLTU start sequence of $EB90_{16}$ and a tail sequence of $C5C5\ C5C5\ C5C5\ C579_{16}$ (as specified in the ICD). If necessary, the user can enter SETBUFFER directives to change the contents of the CLTU start sequence and tail sequence containers. The container names are Pm1cmdCltuExpectedStartSequence and Pm1cmdCltuExpectedTailSequence.
The Serial Output module will not forward data to a Log module.	If logging of transmitted serial data is desired, attach the Log module to the PM1 Spacecraft module (SCPM1) in parallel with the Serial Output module.
The event message window can accept no more than 20 messages per second. The Scenario module can easily overrun this limit and flood the GUI with messages.	Use Sleep directives to slow scenario files to 20 directives per second or less.
Numbers greater than $2^{31}-1$ cannot be displayed in GUI windows. Only blanks are displayed.	Use get directives to display the numbers in the event message log area.
If a container item is to be set to zero via the directive line or from a scenario file, two zeros must be entered.	This is because the first zero is used to flag octal numbers and is then thrown away.

H.2 Assumptions

1. The IP input buffer for commanding for Release 5.0 is defined to be 6000 bytes long. The Command Data Block (CDB) messages may contain multiple CLTU messages.

2. Each AD Transfer Frame is assumed to contain one complete Packet.

3. The telemetry dump buffer is 6000 bytes long.

Attachment I - Release History Summary Matrix

Attached is the release history summary matrix which reflects the MPS/PM1
Release 5.0 delivery. Please note that some of the release numbers reverted to 1.0 with
the Release 3.1 delivery. With Release 5.0, MPS/PM-1 is making use of Release 1.1 of
the generic SIMSS software.

Release History Summary Matrix

System: MPS/Aqua

Release Number		1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
Delivery Date		7/30/99	9/2/99	9/24/99	10/25/99	11/18/99	12/17/99	1/21/00	3/17/00	5/12/00	
Configuration Item	CI No.										
Core (Client)	1.1	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
Core (Server)	1.2	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
SC-PM1 (Client)	1.3	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
SC-PM1 (Server)	1.4	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
GS (Client)	1.5	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
GS (Server)	1.6	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
IP Input (Client)	1.7	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
IP Input (Server)	1.8	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
IP Output (Client)	1.9	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
IP Output (Server)	2.0	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
DQM (Client)[1]	2.1										
DQM (Server)[1]	2.2										
Logging (Client)	2.3	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	
Logging (Server)	2.4	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	

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[1] To be delivered in a future release

Release Number		1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	
Delivery Date		7/30/99	9/2/99	9/24/99	10/25/99	11/18/99	12/17/99	1/21/00	3/17/00	5/12/00	
Configuration Item	CI No.										
Scenario (Client)[2]	2.5								1.0	1.1	
Scenario (Server)2	2.6								1.0	1.1	
Serial Input (Client)2	2.7								1.0	1.1	
Serial Input (Server)2	2.8								1.0	1.1	
Serial Output (Client)2	2.9								1.0	1.1	
Serial Output (Server)2	3.0								1.0	1.1	

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[2] New in Release 4.0

Attachment J - Delivery Details

J.1 Hardware for MPS/PM-1 unit in GSFC, Building 32 Room S9

Qty	Common Name	Model [Serial No.]	Mfg	CSOC No.	Description
1	Computer	E-4200 001-343-8943	Gateway	C0060047	Intel Pentium II 400 Mhz w /512 Cache, 128 MB SDRAM PC100 6ns Micron, Matrox Millenium II 8MB AGP Video card, Toshiba 32x SCSI CD ROM Drive, Seagate 9.1 GB hard disk, IOMEGA 100 mb internal zip drive
1	Monitor	VX1100 811053233	Gateway	C0060041	21" Monitor
1	Mouse	Intellimouse 2570734-10000	Gateway		
1	Keyboard	Q9045A1837	Gateway		
1	Timing Card	PCIDCC20-P	Industrial Computer Source		PCI counter/timer card

J.2 Software

A complete listing of the MPS/PM-1 software file names is available upon request.

Attachment K - Documentation References

The following documents have been employed as the main sources for direction and information in producing Release 5.0 of the MPS/PM-1 simulator.

Document	Location
EOS PM-1 Spacecraft to EOS Ground System Interface Control Document, GSFC 422-11-19-03, dated December, 1999 (more commonly known as "The Space to Ground ICD")	1
Appendix Z – PM-1 Spacecraft Interface with Control Center - Supplement to the EOS PM-1 Spacecraft to EOS Ground System Interface Control Document (GSFC 422-11-19-03), - dated December, 1999	1
Data Format Control Document for the Earth Observing System (EOS) Mission Operations Segment (EMOS) Project Database Volume 1: PM-1 Users Revision -, dated January 2000	4
TRW, EOS PM-1 Spacecraft Flight Software Requirements Specification, ES-SDA-001	1
TRW, Earth Observing System Common Spacecraft Program Flight Software User's Guide, No.: D26696, latest version dated July 31, 1998	1
TRW, EOS Common Spacecraft Command Allocation Document, No.: D25099, (preliminary)	1
TRW, Earth Observing System (EOS) EOS PM-1 Telemetry Allocation Document, No.: D25100, (preliminary)	1
TRW, EOS PM-1 Spacecraft Equipment Specification for Transponder Interface Electronics, No.: EQ4-4957, latest version dated 11 February, 1999	1
TRW, Interface Control Document Between the Earth Observing System (EOS) Data and Operations System (EDOS) and the EOS Ground System (EGS) Elements CDRL B301	2
Consultative Committee for Space Data Systems, CCSDS 102.0-B-4: Packet Telemetry Blue Book, Issue 4, Nov. 1995	3
--, CCSDS 202.1-B-1: Telecommand Part 2.1 – Command Operations Procedures Blue Book, Issue 1, Oct. 1995	3
NASA, GSFC, Earth Observing System Data and Information System (EOSDIS) Test System (ETS) Functional and Performance Requirements for the PM-1 Spacecraft, Sep. 1998	-

Location Legend:

Number	Designation
1	http://www.omitron.com/eosaqua/mittrw.HTM
2	http://esdis-it.gsfc.nasa.gov:8080/servlet/DOCcat?nCatType=ICD
3	http://ccsds.org/publications.html
4	http://www.omitron.com/eosaqua/mitrefdocs.html

Attachment L — Mission Systems Configuration Management Form

This attachment contains the completed Mission Systems Configuration Management (MSCM) form for the delivery of MPS/PM1 Release 5.0.

Mission Systems Configuration Management Form

1. ORIGINATOR	2. ORGANIZATION	3. PHONE	4. E-MAIL ADDRESS
Estelle Noone	CSC	301-805-3653	enoone@csc.com

5. ELEMENT	6. INSTALLATION PRIORITY	7. TRACKING NUMBER
ETS (MPS/PM1)	Routine	(Assigned by CM Office)

8. SOURCE CHANGE REQUEST(S):	9. APPROVALS		
ETS delivery of MPS for EOS PM-1 (MPS/PM1)	Element Manager		___/___/___
	Flight Ops Director		___/___/___
	Operations Manager		___/___/___

10. DELIVERED SYSTEM (Check all that apply)

	Name	Version	Media Identification	Identification Date
☐ Hardware				
☒ Software	MPS/PM1	R5.0	CD-ROM	05/12/00
☐ Database				
☒ Documentation:				
MPS/PM1 delivery package	N/A	3.5 " Diskette		05/12/00
MPS/PM1 Release 5 User's Guide	R5.0	http://esdis-it.gsfc.nasa.gov/ETS/etsdoc.html		May 2000
☐ Other				

11. CHANGE DESCRIPTION

Release 5.0 of MPS/PM-1 (SIMSS/PM-1)

12. ATTACHMENT(S): Check if YES ☒

Description: MPS/PM1 Release 5.0 delivery package (cover letter with attachments) dated 05/12/00

13. CM OFFICE USE

	Location (Bldg/Room)	Slot location(s)
Hardware	___/___	
Media	___/___	
Documentation	___/___	

Installation date	___/___/___	CM Office Signature	

Form MSCM (970327)